2783

PATENT APPLICATION
Attorney Docket No. Q50373

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of

PATEL, CHANDRAKANT B., et al.

Appln. No.: 09/078,555 Group Art Unit: 2683

Confirmation No.: none Examiner: C. TRAN

Filed: May 14, 1998

For: RADIO RECEIVERS FOR RECEIVING BOTH VSB AND QAM DIGITAL TELEVISION SIGNALS

SUBMISSION OF APPELLANTS' BRIEF ON APPEAL

Commissioner for Patents
Washington, D.C. 20231

Sir:

Submitted herewith please find an original and two copies of Appellants' Brief on Appeal. A check for the statutory fee of $320.00 is attached. Authorization is also given to charge or credit any difference or overpayment to Deposit Account No. 19-4880. A duplicate copy of this paper is attached.

Respectfully submitted,

Peter A. McKenna
Registration No. 38,551

SUGHRUE, MION, ZINN,
MACPEAK & SEAS, PLLC
2100 Pennsylvania Avenue, N.W.
Washington, D.C. 20037-3213
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

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APPELLANTS' BRIEF ON APPEAL UNDER 37 C.F.R. § 1.192

Commissioner for Patents
Washington, D.C. 20231

Sir:

In accordance with the provisions of 37 C.F.R. § 1.192, Appellants submit the following:

I. REAL PARTY IN INTEREST

The real party in interest is SAMSUNG ELECTRONICS CO., LTD., by virtue of an assignment executed by the inventors in the parent application no. 08/247,753.

II. RELATED APPEALS AND INTERFERENCES

To the knowledge and belief of Appellants, the Assignee, and the undersigned, there are no other appeals or interferences before the Board of Appeals and Interferences that will directly affect or be affected by the Board's decision in the instant Appeal.

III. STATUS OF CLAIMS

When this application was filed, claims 1-22 were canceled and claims 23-40 were added by Preliminary Amendment. Claims 23-40 stand finally rejected under 35 U.S.C. § 112, first paragraph. Claims 23 and 26-40 stand finally rejected under 35 U.S.C. § 102(e) as being anticipated by Nielsen (USP 6,684,827).

IV. STATUS OF AMENDMENTS

All amendments have been entered.

V. SUMMARY OF THE INVENTION

The present invention relates to a method of controlling the operating mode of an equalizer and a receiver having an adaptive equalizer. According to the method, a direct current (DC) component of a received signal is identified, and the operating mode of the equalizer is controlled in response to the identification of the direct current (DC) component. In the receiver, the adaptive equalizer has different operating modes for responding to a received signal, the operating mode of the adaptive equalizer being selected responsive to the direct current (DC) level of the received signal.

An exemplary embodiment of the invention is shown Figs. 1 and 2. Plural conversion tuner 5 tunes a signal received by antenna 6. The tuned signal may be of different formats. Figs. 1 and 2 show a situation where the tuned signal may be either a QAM signal or a VSB signal. A VSB signal contains a DC pilot carrier. Elements 25, 27 and 28 are used to extract a QAM signal and elements 29, 31 and 32 are used to extract a VSB signal. VSB pilot carrier presence

detector 34 detects the presence of a DC pilot carrier. If the DC pilot carrier is not detected, the receiver is switched to operate in QAM detection mode; if the DC pilot carrier is detected, the receiver is switched to operate in VSB detection mode (page 6, lines 19-28; page 16, lines 4-19). That is, the equalizer is arranged to provide a QAM response or a VSB response (sentence bridging pages 17 and 18), various elements (e.g., data source selector 39, data interleaver 40, Reed-Solomon decoder 41, and data randomizer 42) are configured to operate in either QAM or VSB mode (page 17, lines 19-24), and data sync selector 46 selects between the output of first data sync recovery circuitry 44 (QAM) and the output of second data sync recovery circuitry 45 (VSB) (page 17, lines 19-22).

VI. ISSUES

The issues on appeal are:

1. Whether claims 23-40 are properly rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.
2. Whether claims 23 and 26-40 are properly rejected under 35 U.S.C. § 102(e) as being anticipated by Nielsen (USP 5,684,827).

VII. GROUPING OF CLAIMS

For purposes of the present appeal, the rejected claims do not stand or fall together. Specifically, the rejected claims are divided into the following separately patentable groups.

With respect to the rejection under 35 U.S.C. § 112, first paragraph:

Group 1: Claims 23, 26, 30 and 34.

Group 2: Claim 24.

Group 3: Claim 25.

Group 4: Claims 27 and 35.

Group 5: Claims 28 and 36.

Group 6: Claims 29.

Group 7: Claim 31.

Group 8: Claims 32.

Group 9: Claims 33.

Group 11: Claim 37.

Group 12: Claim 38.

Group 13: Claim 39.

Group 14: Claim 40.

VIII. ARGUMENTS

The Rejection Under 35 U.S.C. § 112, First Paragraph

Claims 23-40 stand rejected pursuant to 35 U.S.C. § 112, first paragraph as containing new subject matter which was not described in the specification in an enabling manner. Specifically, the Examiner asserts that the claim requirements relating to the method of controlling the operation mode and equalizer in response to the identification of the DC component of the received signal, as added in the specification and claims, is unsupported and raises new matter. For at least the reasons set forth below, Appellant respectfully requests the Board to overturn this rejection.

Independent claim 23 discloses a method for controlling the operating mode of an equalizer wherein a direct current (DC) component of a received signal is identified. The identification of the DC component thus controls the operating mode of the equalizer. Independent claims 26, 30, 34 and 37 each disclose a variation of these two elements claimed in independent claim 23.

Independent claims 23, 26, 30, 34 and 37 are fully supported in the original application. The identification of the DC component of the received signal, rejected by the Examiner as unsupported, is fully supported throughout the specification. As disclosed in the specification at page 6 lines 19-30 and page 16 lines 4-19, a pilot detector senses the presence of a pilot carrier accompanying a digital HDTV signal of the VSB type. The detector determines whether the signal is a QAM signal or a VSB signal in order to generate a control signal.

At page 1, lines 6-11, the pilot carrier wave is described as a wave of fixed amplitude wherein the amplitude corresponds to a prescribed percentage of modulation. Furthermore, the

specification, at page 16, lines 4-19, indicates that the pilot carrier signal that accompanies a VSB signal is "zero-frequency", that is, DC. The identification of the DC offset component, therefore, is fully supported by the original specification which terms the DC offset component as a pilot carrier signal.

Furthermore, Figure 1 depicts the pilot carrier presence detector. This detector determines whether the HDTV signal is of the QAM type or VSB type. The detector determines that a signal is of the VSB type when the received signal is accompanied by a DC offset component or pilot carrier. In light of the present evidence, the identification of the DC component of the received signal is fully disclosed and supported in the original specification.

The Examiner also argues that controlling the operating mode of the equalizer in response to the identification of a DC offset component is not described in the specification in an enabling manner. Again, Appellant respectfully disagrees.

Page 6, lines 19-28, describe how the operating mode of the present invention is controlled by the identification of a DC offset component. Specifically, the specification states:

> a detector is provided for determining whether the final IF signal is a QAM signal or a VSB signal to generate a control signal, which is in a first condition when the final IF signal is a QAM signal and is in a second condition when the final IF signal is a VSB signal. Responsive to the control signal being in its first condition, the radio receiver is automatically switched to operate in a QAM signal reception mode; and responsive to the control signal being in its second condition, the radio receiver is automatically switched

> to operate in a VSB signal reception mode. This detector is one which senses the presence of a pilot carrier accompanying a digital HDTV signal of VSB type in certain preferred embodiments of the invention.

Furthermore, Figure 2 shows a signal from detector 34 controlling the operating mode of the equalizer 36. The equalizer, as described at page 17, lines 25-30, and page 18, lines 1-5, is "arranged to provide a flat amplitude-versus-frequency characteristic in response to the VSB pilot carrier presence detector indicating the absence of pilot carrier and the VSB training signal selected by the data sync recovery circuitry is wired through the data sync selector without need for a multiplexer."

The Preliminary Amendment filed May 14, 1998 contains a chart, beginning at page 10, showing examples of support in the specification as originally filed for each of the claim elements. A copy of this chart is provided for convenience.

In view of the explanation presented above with regard to the § 112, first paragraph rejection, Appellant respectfully requests the Board to set aside the rejection of independent claims 23, 26, 30, 34, 37 and the claims that depend therefrom.

Furthermore, claims 23-40 do not stand or fall together. The sole rationale provided by the Examiner for rejecting claims 23-40 under 35 U.S.C. § 112, first paragraph, is that: "The method of controlling the operation mode of and equalizer added in response to the identification of DC component of the received signal added in specification and claims raise new subject matter concerns." Therefore, Appellant assumes that the other features of the claims are not

cause for rejection by the Examiner. However, because the claims generally have combinations of elements which are not shared by other claims, Appellant believes that the claims are generally separately patentable under 35 U.S.C. § 112, first paragraph, with respect to the groupings identified above.

In more detail, claims 23, 26, 30 and 34 are believed to be separately patentable from the other claims because claims 23, 26, 30 and 34 lack the elements of other claims, and thus require less support in the specification. For example, claim 24 requires that:

> the received signal at times comprises multi-level symbols representing data and a field synchronizing signal, said symbols being characterized by being accompanied by a substantially constant direct current (DC) offset component, and at other times comprises multi-level symbols representing data and being characterized by not being accompanied by said substantially constant direct current (DC) offset component, and wherein the step of controlling the operating mode of the equalizer in response to the identification of the direct current (DC) offset component of said received signal comprises substeps of:
>
> determining whether or not said received signal is currently accompanied by said substantially constant direct current (DC) offset component;
>
> calculating desired spectral response for said equalizer using at least a portion of said field synchronizing signal as a training signal, in response to it being determined that the direct current (DC) level said

> received signal is currently accompanied by said substantially constant direct current (DC) offset component;
>
> establishing desired spectral response for said equalizer other than from calculations using at least a portion of said field synchronizing signal as a training signal, in response to it being determined that said received signal is currently unaccompanied by said substantially constant direct current (DC) offset component.

Claim 25 depends from claim 24 and requires that:

> said step of establishing desired spectral response for said equalizer other than from calculations using at least a portion of said field synchronizing signal as a training signal consists of establishing a flat amplitude-versus-frequency characteristic in response to it being determined that said received signal is currently unaccompanied by said substantially constant direct current (DC) offset component.

Claims 27, 35 and 38-40 differ from the other claims at least in that claims 27, 35 and 38-40 each include a field sync symbol. Claim 38 differs from claims 27 and 35 at least in that claim 38 includes:

> a type in which, responsive to the direct component of said received signal being at least a prescribed threshold level, said adaptive equalizer is conditioned to have its amplitude-versus-frequency characteristic determined responsive to calculations using at least a portion of said field synchronizing signal as a training signal.

Claim 39 differs from claim 38 in that claim 39 includes:

> a type in which, responsive to the direct component of said received signal being below a prescribed threshold level, desired spectral

response for said adaptive equalizer is established other than from calculations using a training signal.

Claim 40 differs from claim 39 in that claim 40 includes:

a type in which, responsive to the direct component of said received signal being below a prescribed threshold level, said adaptive equalizer is conditioned to have a flat amplitude-versus-frequency characteristic.

Claim 28 differs from claim 27 in that claim 28 includes:

the field synchronizing signal comprises a pseudo random number symbol sequence and wherein the processing comprises sampling a part of the pseudo random number symbol sequence.

Claim 29 differs from claim 28 in that claim 29 includes:

the sampled symbol sequence is surrounded by a plurality of non-variant symbols.

Claims 24, 27 and 37 differ from the other claims at least in that claims 24, 27 and 37 recite multi-level symbols. Claim 24 differs from claims 27 and 37 at least in that claim 24 includes:

calculating desired spectral response for said equalizer using at least a portion of said field synchronizing signal as a training signal, in response to it being determined that the direct current (DC) level said received signal is currently accompanied by said substantially constant direct current (DC) offset component.

Claim 27 differs from claim 37 at least in that claim 27 includes:

processing the field synchronizing signal to determine the variation of the DC offset in the received signal.

Claims 31, 32, 33, 38 39 and 40 differ from the other claims at least in that claims 31, 32, 33, 38 39 and 40 relate to the relationship of the amplitude of the DC component to a threshold value. Claim 32 differs from claims 31 and 33 at least in that claim 32 includes:

> a type in which, responsive to the amplitude of said direct component of said received signal being less than a prescribed threshold level, desired spectral response for said adaptive equalizer is established other than from calculations using a training signal.

Claims 38-40, which depend from claim 37, differ from claims 31-33, which depend from claim 30, at least because claim 37 recites multilevel symbols.

Prior Art Rejections

The Rejection Under 35 U.S.C. § 102(e)

The Examiner rejected claims 23, and 26-40 under 35 U.S.C. § 102(e) as being anticipated by Nielsen. Nielsen discloses a system for controlling the operating mode of an adaptive equalizer and issued on November 4, 1997. Specifically, the Examiner rejected claims 23, 26-40 under 35 U.S.C. § 102(e) in view of the prior 35 U.S.C. § 112 rejection and thus allocated, to the present application, an effective filing date of May 14, 1998.

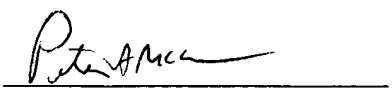
In view of the arguments presented to overcome the Examiner's rejection under 35 U.S.C. § 112, first paragraph, Appellant submitted overwhelming evidence showing that the original specification fully supports the claims. Thus, Appellant submits that the present application is entitled to the benefit of the parent application's filing date of June 28, 1994. In conclusion, because the present invention claims the benefit of the June 28, 1994 filing date,

Nielsen is inapplicable as a prior art reference because Nielsen's October 4, 1995 filing date is clearly later than that of the present application. Therefore, Appellant respectfully requests the Examiner to withdraw the 35 U.S.C. § 102(e) rejection of claims 23, 26-40.

The present Brief on Appeal is being filed in triplicate. Unless a check is submitted herewith for the fee required under 37 C.F.R. §1.192(a) and 1.17(c), please charge said fee to Deposit Account No. 19-4880.

Appellant hereby petitions for any extension of time which may be required to maintain the pendency of this case, and any required fee for such extension is to be charged to Deposit Account No. 19-4880.

Respectfully submitted,



Peter A. McKenna
Registration No. 38,551

SUGHRUE, MION, ZINN,
MACPEAK & SEAS, PLLC
2100 Pennsylvania Avenue, N.W.
Washington, D.C. 20037-3213
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

Date: November 27, 2001

APPENDIX - U.S. App. No. 09/078,555

CLAIMS 23-40 ON APPEAL:

--23. A method of controlling the operating mode of an equalizer comprising steps of:

identifying a direct current (DC) component of a received signal; and

controlling the operating mode of the equalizer in response to the identification of the direct current (DC) component of said received signal.

24. The method of claim 23 wherein the received signal at times comprises multi-level symbols representing data and a field synchronizing signal, said symbols being characterized by being accompanied by a substantially constant direct current (DC) offset component, and at other times comprises multi-level symbols representing data and being characterized by not being accompanied by said substantially constant direct current (DC) offset component, and wherein the step of controlling the operating mode of the equalizer in response to the identification of the direct current (DC) offset component of said received signal comprises substeps of:

determining whether or not said received signal is currently accompanied by said substantially constant direct current (DC) offset component;

calculating desired spectral response for said equalizer using at least a portion of said field synchronizing signal as a training signal, in response to it being determined that the direct current (DC) level said received signal is currently accompanied by said substantially constant direct current (DC) offset component;

establishing desired spectral response for said equalizer other than from calculations using at least a portion of said field synchronizing signal as a training signal, in response to it being determined that said received signal is currently unaccompanied by said substantially constant direct current (DC) offset component.

25. The method of claim 24 wherein said step of establishing desired spectral response for said equalizer other than from calculations using at least a portion of said field synchronizing signal as a training signal consists of establishing a flat amplitude-versus-frequency characteristic in response to it being determined that said received signal is currently unaccompanied by said substantially constant direct current (DC) offset component.

26. A method of controlling the operating mode of an equalizer comprising:

determining the variation, during an interval of time, of the direct current (DC) level of a received signal; and

controlling the operating mode of the equalizer in response to the determined variation.

27. The method of claim 26 wherein the received signal comprises multi-level symbols representing data and a field synchronizing signal, said symbols being characterized by a DC offset and wherein the determining step further comprises;

processing the field synchronizing signal to determine the variation of the DC offset in the received signal.

28. The method of claim 27 wherein the field synchronizing signal comprises a pseudo random number symbol sequence and wherein the processing comprises sampling a part of the pseudo random number symbol sequence.

29. The method of claim 28 wherein the sampled symbol sequence is surrounded by a plurality of non-variant symbols.

30. A digital television receiver comprising:

a detector for determining the direct current (DC) level of a received digital television signal; and

an adaptive equalizer having different operating modes for responding to said received digital television signal, the operating mode of said adaptive equalizer being selected responsive to the direct current (DC) level of said received digital television signal.

31. The receiver of claim 30 further characterized by being of a type in which, responsive to the amplitude of a direct component of said received signal being more than a prescribed threshold value, said adaptive equalizer is conditioned to have its amplitude-versus-frequency characteristic determined responsive to calculations using at least a portion of said field synchronizing signal as a training signal.

32. The receiver of claim 31 further characterized by being of a type in which, responsive to the amplitude of said direct component of said received signal being less than a prescribed threshold level, desired spectral response for said adaptive equalizer is established other than from calculations using a training signal.

33. The receiver of claim 31 further characterized by being of a type in which, responsive to the amplitude of said direct component of said received signal being less than a prescribed threshold level, said adaptive equalizer is conditioned to have a flat amplitude-versus-frequency characteristic.

34. A receiver including an adaptive equalizer having different operating modes comprising:

means for determining the variation of the direct current (DC) level of a received signal during an interval of time; and

means for controlling the operating mode of said adaptive equalizer as a function of the determined DC variation.

35. The receiver of claim 34 wherein said received signal includes a field sync signal and wherein said DC variation determining means operates on said field sync signal.

36. The receiver of claim 35 wherein said field sync signal comprises a pseudo random number sequence of symbols, and further including:

means for sampling a portion of said sequence of symbols for processing by said DC variation means.

37. A receiver for signals that comprise multi-level symbols representing data and a field synchronizing signal, said symbols being characterized by being accompanied by a substantially constant DC component, and for signals that comprise multi-level symbols representing data and being characterized by not being accompanied by said substantially constant DC component, said receiver comprising:

a detector for determining the DC component of a received signal;

an adaptive equalizer having different operating modes for responding to said multi-level symbols, said adaptive equalizer arranged for having its current operating mode selected

responsive to the level of the direct component of said received signal as detected by said detector.

38. The receiver of claim 37 further characterized by being of a type in which, responsive to the direct component of said received signal being at least a prescribed threshold level, said adaptive equalizer is conditioned to have its amplitude-versus-frequency characteristic determined responsive to calculations using at least a portion of said field synchronizing signal as a training signal.

39. The receiver of claim 38 further characterized by being of a type in which, responsive to the direct component of said received signal being below a prescribed threshold level, desired spectral response for said adaptive equalizer is established other than from calculations using a training signal.

40. The receiver of claim 38 further characterized by being of a type in which, responsive to the direct component of said received signal being below a prescribed threshold level, said adaptive equalizer is conditioned to have a flat amplitude-versus-frequency characteristic.

23. A method of controlling the operating mode of an equalizer comprising steps of:	Figs. 1, 2, 11 and 12; see equalizer 36 in Fig. 2 and specification at page 14, lines 10-23.
identifying a direct current (DC) component of a received signal; and	Fig. 1, pilot detector 34; see Figs. 11 and 12 for details; and page 16, lines 4-19 and page 38, line 10-page 39, line 9 of the specification.
controlling the operating mode of the equalizer in response to the identification of the direct current (DC) component of said received signal.	Fig. 2 shows a DC level from detector 34 controlling the operating mode of equalizer 36; see page 6, lines 19-28, page 17, lines 6-9 and sentence bridging pages 17 and 18.
24. The method of claim 23 wherein the	The VSB television signal for HDTV

received signal at times comprises multi-level symbols representing data and a field synchronizing signal, said symbols being characterized by being accompanied by a substantially constant direct current (DC) offset component,	inherently contains multi-level symbols and field sync signals, the symbols accompanied by a DC offset; page 13, lines 13-25; page 17, line 12-page 18, line 3.
and at other times comprises multi-level symbols representing data and being characterized by not being accompanied by said substantially constant direct current (DC) offset component,	The QAM television signal for HDTV inherently contains multi-level symbols and field sync signals, but the symbols do not have a DC offset; page 13, lines 13-25; page 17, line 12-page 18, line 3.
and wherein the step of controlling the operating mode of the equalizer in response to the identification of the direct current (DC) offset component of said received signal comprises substeps of:	
determining whether or not said received signal is currently accompanied by said substantially constant direct current (DC) offset component;	Figs. 2, 11 and 12; detector 34 makes such determination; specification at page 38, line 10 to page 41, line 14.
calculating desired spectral response for said equalizer using at least a portion of said field synchronizing signal as a training signal, in response to it being determined that the direct current (DC) level said received signal is currently accompanied by said substantially constant direct current (DC) offset component; and	Specification at page 17, lines 6-9.
establishing desired spectral response	Operation during QAM reception as disclosed

for said equalizer other than from calculations using at least a portion of said field synchronizing signal as a training signal, in response to it being determined that said received signal is currently unaccompanied by said substantially constant direct current (DC) offset component.	at pages 17 and 18.
25. The method of claim 24 wherein said step of establishing desired spectral response for said equalizer other than from calculations using at least a portion of said field synchronizing signal as a training signal consists of establishing a flat amplitude-versus-frequency characteristic in response to it being determined that said received signal is currently unaccompanied by said substantially constant direct current (DC) offset component.	Operation as disclosed at pages 17 and 18.
26. A method of controlling the operating mode of an equalizer comprising:	Figs. 1, 2, 11 and 12; see equalizer 36 in Fig. 2 and specification at page 14, lines 10-23.
determining the variation, during an interval of time, of the direct current (DC) level of a received signal; and	Fig. 1, pilot detector 34; see Figs. 11 and 12 for details, and page 16, lines 4-19; the interval of time can start at the time a TV receiver is turned on, at the time of channel switching, or based on the time of kernel width of the digital lowpass filter in the VSB pilot presence detector 34.
controlling the operating mode of the equalizer in response to the determined	Fig. 2 shows a DC level from detector 34 controlling the operating mode of equalizer

variation.	36; see page 6, lines 19-28, page 17, lines 6-9 and sentence bridging pages 17 and 18.
27. The method of claim 26 wherein the received signal comprises multi-level symbols representing data and a field synchronizing signal, said symbols being characterized by a DC offset and wherein the determining step further comprises;	The VSB television signal for HDTV inherently contains multi-level symbols and field sync signals, the symbols being accompanied by a DC offset; page 13, lines 13-25; page 17, line 12-page 18, line 3.
processing the field synchronizing signal to determine the variation of the DC offset in the received signal.	Figs. 2, 11 and 12; the VSB pilot presence detector 34 processes all portions of a signal, including data and field sync signal.
28. The method of claim 27 wherein the field synchronizing signal comprises a pseudo random number symbol sequence and wherein the processing comprises sampling a part of the pseudo random number symbol sequence.	Figs. 2, 11 and 12; the VSB pilot presence detector 34 processes all portions of a signal, including the PN symbol sequence in the field sync signal.
29. The method of claim 28 wherein the sampled symbol sequence is surrounded by a plurality of non-variant symbols.	This is inherent in the VSB HDTV signal.
30. A digital television receiver comprising:	Figs. 1, 2, 11 and 12; see equalizer 36 in Fig. 2 and specification at page 14, lines 10-23.
a detector for determining the direct current (DC) level of a received digital	Detector 34 in Fig. 1.

television signal; and	
an adaptive equalizer having plural operating modes for responding to said received digital television signal, the operating mode of said adaptive equalizer being selected responsive to the direct current (DC) level of said received digital television signal.	Equalizer 36 in Fig. 2.
31. The receiver of claim 30 further characterized by being of a type in which, responsive to the amplitude of a direct component of said received signal being more than a prescribed threshold value, said adaptive equalizer is conditioned to have its amplitude-versus-frequency characteristic determined responsive to calculations using at least a portion of said field synchronizing signal as a training signal.	Equalizer 36 in Fig. 2; specification at page 16, line 4- page 18, line 1.
32. The receiver of claim 31 further characterized by being of a type in which, responsive to the amplitude of said direct component of said received signal being less than a prescribed threshold level, desired spectral response for said adaptive equalizer is established other than from calculations using a training signal.	Equalizer 36 in Fig. 2; specification at page 16, line 4- page 18, line 1.
33. The receiver of claim 31 further	Equalizer 36 in Fig. 2; specification at page

characterized by being of a type in which, responsive to the amplitude of said direct component of said received signal being less than a prescribed threshold level, said adaptive equalizer is conditioned to have a flat amplitude-versus-frequency characteristic.	16, line 4- page 18, line 1.
34. A receiver including an adaptive equalizer having different operating modes comprising:	Figs. 1, 2, 11 and 12; see equalizer 36 in Fig. 2 and specification at page 14, lines 10-23.
means for determining the variation of the direct current (DC) level of a received signal during an interval of time; and	Fig. 1, pilot detector 34; see Figs. 11 and 12 for details, and page 16, lines 4-19; the interval of time can start at the time a TV receiver is turned on, at the time of channel switching, or based on the time of kernel width of the digital lowpass filter in the VSB pilot presence detector 34..
means for controlling the operating mode of said adaptive equalizer as a function of the determined DC variation.	Fig. 2 shows a DC level from detector 34 controlling the operating mode of equalizer 36; see page 6, lines 19-28, page 17, lines 6-9 and sentence bridging pages 17 and 18.
35. The receiver of claim 34 wherein said received signal includes a field sync signal and wherein said DC variation determining means operates on said field sync signal.	Specification at page 16, line 4- page 18, line 1.
36. The receiver of claim 35 wherein said field sync signal comprises a pseudo random number sequence of symbols, and further	Specification at page 16, line 4- page 18, line 1.

including:	
means for sampling a portion of said sequence of symbols for processing by said DC variation means.	Specification at page 16, line 4- page 18, line 1.
37. A receiver for signals that comprise multi-level symbols representing data and a field synchronizing signal, said symbols being characterized by being accompanied by a substantially constant DC component, and for signals that comprise multi-level symbols representing data and being characterized by not being accompanied by said substantially constant DC component, said receiver comprising:	Figs. 1, 2, 11 and 12; see equalizer 36 in Fig. 2 and specification at page 14, lines 10-23; VSB signal has a DC component while QAM signals do not have such component.
a detector for determining the DC component of a received signal;	Fig. 1, pilot detector 34; see Figs. 11 and 12 for details, and page 16, lines 4-19.
an adaptive equalizer having different operating modes for responding to said multi-level symbols, said adaptive equalizer arranged for having its current operating mode selected responsive to the level of the direct component of said received signal as detected by said detector.	Equalizer 36 in Fig. 2 and described in the specification at page 14, lines 10-23.
38. The receiver of claim 37 further characterized by being of a type in which,	Equalizer 36 in Fig. 2; specification at page 16, line 4- page 18, line 1.

responsive to the direct component of said received signal being at least a prescribed threshold level, said adaptive equalizer is conditioned to have its amplitude-versus-frequency characteristic determined responsive to calculations using at least a portion of said field synchronizing signal as a training signal.	
39. The receiver of claim 38 further characterized by being of a type in which, responsive to the direct component of said received signal being below a prescribed threshold level, desired spectral response for said adaptive equalizer is established other than from calculations using a training signal.	Equalizer 36 in Fig. 2; specification at page 16, line 4- page 18, line 1.
40. The receiver of claim 38 further characterized by being of a type in which, responsive to the direct component of said received signal being below a prescribed threshold level, said adaptive equalizer is conditioned to have a flat amplitude-versus-frequency characteristic.	Equalizer 36 in Fig. 2; specification at page 16, line 4- page 18, line 1.